CLAIMS

Having thus described our invention, what we claim as new and desire to secure by Letters Patent is:

1. A spatial light modulator array for modulating light to form an image comprising:

a plurality of liquid crystal devices positioned over respective mirrors on a dielectric layer on a semiconductor substrate,

a plurality of electrical circuits formed in said semiconductor substrate coupled to said liquid crystal devices, respectively, for placing a voltage across its electrodes, and

a reflector/absorber layer positioned and patterned with respect to said mirrors for shielding said plurality of electrical circuits from ambient light,

said reflector/absorber layer having an edge overlapping an edge of said mirror to form an overlapping region to decrease ambient light from passing into said semiconductor substrate.

2. The spatial light modulator array of claim 1 wherein said reflector/absorber layer overlaps said edge of said mirror by at least 5.4μm.

3. The spatial light modulator array of claim 1 wherein said mirrors are formed from a metal layer wherein said metal is selected from the group consisting of Ag, Al and alloys thereof.

4. The spatial light modulator array of claim 1 wherein said mirrors have a supporting layer having a substantially planar upper surface and said mirrors include a respective metal layer for reflecting light on said substantially planar upper surface of said supporting layer.

5. The spatial light modulator array of claim 4 wherein said supporting layer includes dielectric material and electrical vias for electrical connection to said metal layer.

6. The spatial light modulator array of claim 1 wherein said plurality of liquid crystal devices have a thickness determined by a dielectric layer having openings formed over said respective mirrors.

7. The spatial light modulator array of claim 6 wherein said dielectric layer includes material is selected from the group consisting of SiO_2, Si_3N_4, diamond-like carbon, and polyamide.

8. The spatial light modulator array of claim 6 wherein said respective mirrors form the lower electrode of said plurality of

liquid crystal devices and being electrically coupled to respective outputs of said plurality of electrical circuits.

9. The spatial light modulator array of claim 1 wherein said reflector/absorber layer is selected from the group consisting of Al, Cr-Cr_xOy, Ti and TiN and TiN_xCy where.

10. The spatial light modulator array of claim 1 wherein said reflector/absorber layer is electrically conductive and forms a blanket layer over said semiconductor substrate with openings therein for electrical vias to said mirrors.

11. The spatial light modulator array of claim 1 wherein said electrical circuits include complementary metal oxide silicon (CMOS) circuits.

12 The spatial light modulator array of claim 1 wherein each of said mirrors and said reflector/absorber layer forms a capacitor of at least 0.03 pf.

13. The spatial light modulator array of claim 1 wherein said liquid crystal devices are positioned in rows and columns on a pitch in each of two directions of about 17 microns or less.

14. A method of forming a spatial light modulator array comprising the steps of:

forming a plurality of electrical circuits in a semiconductor substrate positioned for interconnecting with subsequently formed liquid crystal devices, respectively,

forming one or more layers of interconnections above said plurality of electrical circuits,

forming a first dielectric layer over said electrical circuits and said layers of interconnections,

planarizing said first dielectric layer to provide a substantally planar upper surface on said first dielectric layer,

forming a reflector/absorber layer of condutive material, positioned and patterned with respect to subsequently formed liquid crystal devices for shielding said plurality of electrical circuits from ambient light,

forming a second dielectric layer above said patterned reflector/absorber layer,

forming studs through said second dielectric layer for electrical connection to subsequently formed mirrors,

forming a plurality of mirrors over said dielectric layer and patterned to form the lower electrode of said plurality of liquid crystal devices, said mirrors overlapping said reflector/absorber

layer to form a capacitor with respect to said ~~overlapping~~ mirrors and to attenuate light traveling between said reflect/absorber and said mirrors,

forming a plurality of spacers positioned in between selected mirrors of said plurality of mirrors,

applying a layer of liquid crystal material,

orienting said layer of liquid crystal material, and

forming a top electrode of said plurality of mirrors to form said plurality of liquid crystal devices.

add A1

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add C1